OUTGOING LTR NO.

DOE ORDER #

RF

DIST.	LTR	ENC
BACA, T.		
BRAILSFORD, M.D.		
BRYNER, C.J.		
CARD, R.G.		
COX, C.M.		
CRAWFORD, A.C.		
FERREIRA, D.W.		
FERRI, M.S.		
FULTON, J.C.		
GIACOMINI, J.		
MARTINEZ, L.A.		
MOTES, J.L.		
TRICE, K.D.		
POWERS, K.		
SCOTT, G.K.		
SHELTON, D.C.		
SPEARS, M.S.		
TUOR, N.R.		
Nininger, Bob	✓	
Norland, Lee	✓	
COR. CONTROL	X	X
ADMN. RECORD		
WASTE REC. CTR.		
TRAFFIC		
PATS/T130G		
CLASSIFICATION:		
UCNI		
UNCLASSIFIED	✓	
CONFIDENTIAL		
SECRET		

AUTHORIZED CLASSIFIER SIGNATURE

Exempt from Class ____
Per CEX 072-99 ____
Date

IN REPLY TO RFP CC NO:

ACTION ITEM STATUS

☐ PARTIAL/OPEN

☒ CLOSED

LTR APPROVALS:

ORIG & TYPIST INITIALS

KAISER•HILL COMPANY

May 14, 2001

01-RF-01107

Ms. Shirley Garcia
Environmental Services
City of Broomfield
One Descombes Drive
Broomfield, CO 80020

RE: RESPONSES TO CITY OF BROOMFIELD COMMENTS ON THE FINAL MODEL CODE AND SCENARIO SELECTION REPORT, CSD-005-01

Dear Shirley:

Attached please find comment responses on the Model Code and Scenario Selection Report for the Rocky Flats Environmental Technology Site (RFETS or Site) Site-wide Water Balance (SWWB) provided in your letter dated April 6, 2001. Based on comments received on this report and coordination with the Land Configuration Design Basis project, the Scenario Section of the Report will be revised and clarified. Our responses to your comments are as follows:

Comment: Integration of water balance model and actinide migration model
The Site-wide Water Balance model (SWWB) report does not address how the MIKE SHE model will be integrated with the Actinide Migration Evaluation (AME) model or other contaminant transport modeling. The ability to simulate erosion and sediment transport and dissolved species transport are secondary objectives of the SWWB scope, yet the report does not identify when or how the secondary objectives will be addressed. Will MIKE SHE be able to model sediment loading within the holding ponds, South Interceptor Ditch (SID), or other channel pathways? Identify the capabilities and limitations of the integration of the models to determine end-state transport modeling.

Response: Contaminant transport modeling will not be conducted under the current SWWB work scope. Contaminant transport modeling requires groundwater and surface water flow information as model inputs; this information will be provided by the SWWB modeling effort. Data from the Watershed Erosion Prediction Project (WEPP)/HEC-6T model were used as inputs to the MIKE SHE model (e.g., stream cross-sections and distributed channel resistance factors). Next fiscal year, an evaluation if integration of the AME and SWWB management tools is warranted; during the evaluation, the capabilities and limitation of the model integration will be assessed. The current SWWB model does not simulate sediment transport or load; it is focuses only on hydrologic and hydraulic flow.

iser Hill Company, L.L.C.
cky Flats Environmental Technology Site, 10808 Hwy. 93 Unit B, Golden CO 80403-8200 • 303-966-7000

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MIKE SHE has several additional capabilities that could be used to simulate transport and cohesive/non-cohesive sediment transport within the integrated system. To utilize these capabilities, the SWWB model grid resolution must be considered for each specified objective.

Comment: Quality Assurance
The document does not address quality assurance (QA) of the model. Provide the City with the QA support documentation to authenticate a valid QA program for the selected model.

Response: The SWWB Model QA Program is described in the "Scope of Work for MIKE SHE Code Verification and Validation for RFETS Site-Wide Water Balance Model", dated March 29, 2001, which was provided to you at the April 18, 2001 Stakeholder Meeting. In addition, validation activities were also presented in the SWWB Work Plan (i.e., the 1995 high flow period and post-audit period after calibration).

Comment: Scenario 1-Subsurface pipes foamed/removed
The City feels it will be difficult to predict water flows when pipes are plugged. The locations of all the pipes at the Site are not known and the City is concerned that the report does not address old process waste lines (OPWLs) and new process lines (NPWLs). Presumed plans for the rerouting of runoff should be coordinated with the Land Configuration Design Basis Project.

Response: Effects of the NPWL and OPWL on groundwater flow are considered in the SWWB model to the extent possible with the 200-foot model grid. There are two ways Process Waste Lines (PWLs) affect groundwater flow. One is the adjustment of average hydraulic conductivity in these model cells due to the "backfill" material associated with the utility corridor. The second is that these pipes are conduits for groundwater infiltration via pipeflow. Infiltration to the PWLs is considered negligible to the Site-scale SWWB model. Based upon review of engineering drawings, backfill material is being modeled with the properties of sand for all utility corridors. The backfill hydraulic conductivity and the natural unconsolidated material hydraulic conductivity are used to estimate an effective hydraulic conductivity for the model cell. This effective hydraulic conductivity is also based on the density of all the different utility lines within a model cell.

Plans for potential rerouting of runoff will be coordinated with personnel from the Land Configuration Design Basis Project.

Comment: The City is concerned with lack of information and/or data to incorporate flow modeling and distribution to fully understand the direction and quantity of flow after closure. Identification of both quantity and direction of flow after closure is key to determining the final land configuration of the site.

Response: The SWWB project has compiled the best data and information available (including collection of new data) for the model. There are many different combinations of future land configurations and climate scenarios; it would be unrealistic to simulate all of them. Instead, the planned final land configuration and climate scenarios are designed to evaluate the range of possible hydrologic and hydraulic responses due to controlled and uncontrolled stresses to the system. The testing of progressively more complicated scenarios is intended to develop a detailed understanding of the potential interactions among various features that will change at closure. The model scenarios are "test cases" intended to provide insights into closure planning; they are not meant to represent closure decisions.

Comment: Scenario 2-90 acres covered
Please provide the City with information related to the design of the engineered cover. Identify the areas, which have been proposed to have engineered covers, along with the rationale for specifically identifying that 90 acres will be covered. What is the source of information for the type of hydrologic properties of the engineered cover and the specific quality assurance/quality controls associated with the covers?

Response: Information on the engineered covers will be provided to the SWWB project by the Environmental Restoration Landfill Cover Design Project. Daniel B. Stephens and Associates, Inc. are supporting the project and evaluating the details of the covers, including hydrologic properties.

Comment: Scenario 3- Surface regrading
Scenario 3 simulates the effects of the building basement foundations remaining lower than three feet below grade. In addition to all building foundations remaining in place, does the scenario consider large pockets of recycled concrete remaining lower than three feet of grade? The model should have the capabilities to simulate the effects of localized foundations and/or buried concrete.

Response: The SWWB model will have the capability of simulating recycled concrete and building foundation remains on a 200-foot- by 200-foot basis and evaluating the regional impact to flow in the Industrial Area and Buffer Zone. If necessary, detailed "telescoped" models can be developed (using information from the Site-wide model as boundary conditions) to simulate local effects of remaining foundations or buried concrete.

Additional calibration data will likely be required to provide the necessary details in the telescoped model.

Comment: Climate scenarios
The model should have the capabilities to simulate twenty-five and one hundred-year storm events. Broomfield is concerned with the impacts associated with major storm

events and wants to ensure the Water Management Closure Strategy addresses extreme climatic events and associated surface water pathways.

Response: The Spring 1995 event (a 15-year 24-hour event) will be evaluated as part of model validation. A one hundred-year storm event will be evaluated for each of the five land configuration scenarios. The hydraulic system response in addition to any subsurface response can be evaluated at any point within the model domain, both during and after the event.

Comment: Proposed and existing treatment units. The plan does not discuss how present and proposed treatment units will be addressed in the modeling. How is the South Interceptor Ditch (SID) captured in the modeling? Broomfield is concerned the proposed modeling may not be able to simulate other proposed treatment units or end-state visions Environmental Restoration is proposing.

Response: Remediation systems will be simulated in the SWWB as a drain or a slurry wall (in the landfill) with the sensitivity possible within the 200-foot grid. Invert elevations of the drains and associated drain cell leakance values are specified within the model cells. Simulated leakage rates will be compared against recorded data for these systems, and the model leakance values will be adjusted to obtain a good match between simulated and observed outflow. Surface flow in the SID is modeled using the one-dimensional fully-hydrodynamic St. Venant equations in MIKE11. Localized or focused modeling of the present or future treatment cells can be conducted using "telescoped" models (using information from the Site-wide model) but is not part of the current scope of the SWWB.

Please feel free to contact me if you have any additional comments or require additional information.

Sincerely,

Christine S. Dayton
Environmental Systems and Stewardship
Kaiser-Hill Company, L.L.C.

Cc: Dave Abelson, RFCLOG
Norma Castaneda, DOE-RFFO
Steve Gunderson, CDPHE
Ken Korkia, RFCAB
Tim Rehder, EPA
John Stover, DOE-RFFO

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